

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	24	(colli\$5 near5 detect\$3) and ((velocity or speed or acceleration) near6 (random) near6 (data or sample))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/22 16:34
L2	1374	((velocity or speed or acceleration) near6 (random) near6 (data or sample))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/22 16:34
L3	6074	382/104,199,281,291.ccls. or 701/65,208,209,300,301,302.ccls. or 340/931,932,961.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/22 16:34
L4	5	2 and 3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/22 16:34
S1	14899	(collision near5 detect\$3)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 14:56
S2	33	382/104.ccls. and S1	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/07 13:38
S3	47	(colli\$5 near5 detect\$3) and (size same (position or coordinat\$4) same (velocity or speed) same (trajectory or path))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 14:59
S4	8	"382"/\$.ccls. and S3	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/07 17:40
S5	28	382/104,199,281,291.ccls. and 701/65,208,209,300,301,302.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 14:59
S6	5791	382/104,199,281,291.ccls. or 701/65,208,209,300,301,302.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 16:07
S7	121	(colli\$5 near5 detect\$3) and (vector near6 (classif\$7 or group\$3))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 15:22
S8	7	S6 and S7	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 15:05

S9	350	(colli\$5 near5 detect\$3) and (vector same (classif\$7 or group\$3))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/22 16:21
S10	12	S6 and S9	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 15:22
S11	6065	382/104,199,281,291.ccls. or 701/65,208,209,300,301,302.ccls. or 340/931,932,961.ccls.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/22 16:34
S12	13	S9 and S11	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2005/02/18 16:07

File 2:INSPEC 1969-2005/Jan W5
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(c) 2002 The Gale Group
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(c) 2001 ProQuest Info&Learning
File 483:Newspaper Abs Daily 1986-2005/Feb 08
(c) 2005 ProQuest Info&Learning
File 248:PIRA 1975-2005/Jan W3
(c) 2005 Pira International

Set	Items	Description
S1	50165	VISION(3N)SYSTEM?
S2	2533990	TARGET?? OR OBJECT?? OR OBSTACLE?
S3	167479	(IDENTIF? OR CLASSIFI? OR SIZE OR DETECT? OR DETERMIN? OR - TRACK?) (3N)S2
S4	1418797	AUTO OR AUTOMOBILE? OR CAR OR CARS OR VEHICLE? OR TRUCK??
S5	517794	COLLISION??
S6	75048	(MOVE OR MOVING OR MOVED OR POSITION OR LOCAT?) (3N)S2
S7	45042	(PROXIMAT? OR CLOSEBY OR NEARBY OR NEAR) AND S4
S8	26366	S5 AND AVOID?
S9	172433	S4 AND (ADJUST? OR ADAPT? OR MODIF? OR CHANG?)
S10	8427	(WARN? OR ALARM? OR ALERT? OR ALARUM OR NOTIF? OR NOTICE OR PROMPT?) AND DRIVER?
S11	2862778	IMAG?
S12	61169	STEREO
S13	9521	(S11 OR MAPS) (3N)DEPTH
S14	30973	(COMPAR? OR MATCH? OR CORRESPOND? OR CORRELAT?) AND TEMPLA- TE??
S15	54254	KALMAN (3N) FILTER?
S16	27759	LOW() PASS() FILTER?
S17	708	AU=(CAMUS, T? OR HIRVONEN, D? OR MANDELBAUM, R? OR CALL, B? OR HILL, I? OR RIEDER, A? OR SOUTHALL, J?)
S18	3542	S3 AND S11 AND S12
S19	0	S18 AND S15 AND S16
S20	172	S18 AND (S15 OR S16)
S21	5	S20 AND S5
S22	5	RD S21 (unique items)

S23 10 S20 AND (S8 OR S9 OR S10)
S24 5 S23 NOT S21
S25 5 RD S24 (unique items)
S26 3 S20 AND S14
S27 3 S26 NOT (S23 OR S21)
S28 2 RD S27 (unique items)
S29 14 S17 AND S1
S30 14 S29 NOT (S26 OR S23 OR S21)
(S31 12 RD S30 (unique items)
S32 257 S6 AND S7
S33 94 S32 AND S8:S10
S34 0 S33 AND (S13 OR S14)
S35 0 S33 AND S11 AND DEPTH
S36 5 S33 AND (S15 OR S16)
S37 5 S36 NOT (S30 OR S26 OR S23 OR S21)
S38 3 RD S37 (unique items)
S39 118 S1 AND S3 AND S4 AND S5
S40 85 S39 AND (S11 OR S12 OR S13 OR S15 OR S16)
S41 17 S39 AND S11 AND S12
S42 15 S41 NOT (S36 OR S30 OR S26 OR S23 OR S21)
S43 14 RD S42 (unique items)
S44 5 S39 AND S13
S45 3 S44 NOT (S41 OR S36 OR S30 OR S26 OR S23 OR S21)
S46 1 RD S45 (unique items)
S47 1 S39 AND S14
S48 1 S47 NOT (S44 OR S41 OR S36 OR S30 OR S26 OR S23 OR S21)
S49 10 S39 AND (S14 OR S15)
S50 9 S49 NOT (S47 OR S44 OR S41 OR S36 OR S30 OR S26 OR S23 OR -
S21)
S51 8 RD S50 (unique items)

22/3,K/1 (Item 1 from file: 2)

DIALOG(R) File 2:INSPEC

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7309983 INSPEC Abstract Number: B2002-08-6135-098, C2002-08-5260B-118

Title: Vision-based real-time obstacles detection and tracking for autonomous vehicle guidance

Author(s): Ming Yang; Qian Yu; Hong Wang; Bo Zhang

Author Affiliation: State Key Lab. of Intelligent Technol. & Syst., Tsinghua Univ., Beijing, China

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference Title: /Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.4666 p.65-74

Publisher: SPIE-Int. Soc. Opt. Eng,

Publication Date: 2002 Country of Publication: USA

CODEN: PSISDG ISSN: 0277-786X

SICI: 0277-786X(2002)4666L.65:VBRT;1-L

Material Identity Number: C574-2002-185

U.S. Copyright Clearance Center Code: 0277-786X/02/\$15.00

Conference Title: Real-Time Imaging VI

Conference Sponsor: SPIE

Conference Date: 23-24 Jan. 2002 Conference Location: San Jose, CA, USA

Language: English

Subfile: B C

Copyright 2002, IEE

Title: Vision-based real-time obstacles detection and tracking for autonomous vehicle guidance

Abstract: The ability of obstacles detection and tracking is essential for the safe visual guidance of autonomous vehicles, especially in urban environments. In this paper, we first overview different plane projective transformation (PPT) based obstacle detection approaches under the planar ground assumption. Then, we give a simple proof of this approach...

... projective and affine frameworks by generalization and specialization. Next, we present a real-time hybrid obstacle detection method, which combined the PPT based method with the region segmentation based method to provide more accurate locations of obstacles. At last, with the vehicle's position information, a Kalman Filter is applied to track obstacles from frame to frame. This method has been tested on THMR-V (Tsinghua Mobile Robot...

Descriptors: collision avoidance...

... Kalman filters ; ...

... stereo image processing

Identifiers: vision-based real-time obstacles detection ; ...

... obstacles tracking ; ...

... plane projective transformation based obstacle detection ; ...

... Kalman filter ; ...

... stereo vision

22/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2005 Institution of Electrical Engineers. All rts. reserv.

6821620 INSPEC Abstract Number: B2001-03-7630-001, C2001-03-3360L-001
Title: An obstacle detection and warning system for aircraft
navigation at airports

Author(s): Gallo, L.
Author Affiliation: Aerospatiale Matra Missiles, Chatillon, France
Journal: Proceedings of the SPIE - The International Society for Optical
Engineering Conference Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA)
vol.4023 p.13-19
Publisher: SPIE-Int. Soc. Opt. Eng,
Publication Date: 2000 Country of Publication: USA
CODEN: PSISDG ISSN: 0277-786X
SICI: 0277-786X(2000)4023L.13:ODWS;1-X
Material Identity Number: C574-2000-196
U.S. Copyright Clearance Center Code: 0277-786X/2000/\$15.00
Conference Title: Enhanced and Synthetic Vision 2000
Conference Sponsor: SPIE
Conference Date: 24-25 April 2000 Conference Location: Orlando, FL,
USA

Language: English
Subfile: B C
Copyright 2001, IEE
Title: An obstacle detection and warning system for aircraft
navigation at airports

Abstract: This paper discusses work conducted by AEROSPATIALE MATRA on
the development of an obstacle detection system, which has been tested
on a demonstrator aircraft in Toulouse. The purpose of this...

...Descriptors: collision avoidance...

... image reconstruction...

... Kalman filters ; ...

... stereo image processing

Identifiers: obstacle detection system...

... stereo vision...

... Kalman filter

22/3,K/3 (Item 1 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

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06201056 E.I. No: EIP02467203926

Title: Vision-based real-time obstacles detection and tracking for
autonomous vehicle guidance

Author: Yang, Ming; Yu, Qian; Wang, Hong; Zhang, Bo
Corporate Source: Tsinghua University, Beijing 100084, China
Conference Title: Real-Time Imaging VI
Conference Location: San Jose, CA, United States Conference Date:
20020123-20020124
E.I. Conference No.: 60155

Source: Proceedings of SPIE - The International Society for Optical Engineering v 4666 2002. p 65-74
Publication Year: 2002
CODEN: PSISDG ISSN: 0277-786X
Language: English

Title: Vision-based real-time obstacles detection and tracking for autonomous vehicle guidance

Abstract: The ability of obstacles detection and tracking is essential for the safe visual guidance of autonomous vehicles, especially in urban environments. In this paper, we first overview different plane projective transformation (PPT) based obstacle detection approaches under the planar ground assumption. Then, we give a simple proof of this approach...

...projective and affine frameworks by generalization and specialization. Next, we present a real-time hybrid obstacle detection method, which combined the PPT based method with the region segmentation based method to provide more accurate locations of obstacles. At last, with the vehicle's position information, a Kalman filter is applied to track obstacles from frame to frame. This method has been tested on THMR-V (Tsinghua Mobile Robot...

Descriptors: *Computer vision; Collision avoidance; Unmanned vehicles; Stereo vision; Image segmentation; Kalman filtering ; Mobile robots; Algorithms

Identifiers: Obstacle detection ; Autonomous vehicle guidance; Plane projective transformation; Relative affine

22/3,K/4 (Item 2 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
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06084536 E.I. No: EIP02277005208

Title: Realtime omnidirectional stereo for obstacle detection and tracking in dynamic environments

Author: Koyasu, Hiroshi; Miura, Jun; Shirai, Yoshiaki
Corporate Source: Dept. of Comp.-Controlled Mech. Sys. Osaka University, Suita, Osaka 565-0871, Japan

Conference Title: 2001 IEEE/RSJ International Conference on Intelligent Robots and Systems

Conference Location: Maui, HI, United States **Conference Date:** 20011029-20011103

E.I. Conference No.: 59229

Source: IEEE International Conference on Intelligent Robots and Systems v 1 2001. p 31-36 (IEEE cat n 01ch37180)

Publication Year: 2001

CODEN: 85RBAH

Language: English

Title: Realtime omnidirectional stereo for obstacle detection and tracking in dynamic environments

Abstract: This paper describes a realtime omnidirectional stereo system and its application to obstacle detection and tracking for a mobile robot. The stereo system uses two omnidirectional cameras aligned vertically. The images from the cameras are converted into panoramic images, which are then examined for stereo matching along vertical epipolar lines. A PC cluster system composed of 6 PCs can generate...

...data of 720x100 pixels with disparity range of 80 about 5 frames per second. For **obstacle detection**, a map of static obstacles is first generated. Then candidates for moving obstacles are extracted...

...candidates are established based on their estimated position and velocity which are calculated using a **Kalman filter**-based tracking. Experimental results for a real scene are described. 10 Refs.

Descriptors: *Mobile robots; Computer vision; **Stereo** vision; Motion control; **Collision avoidance**; Pattern matching; Imaging systems; Real time systems; Cameras; Personal computers; **Kalman filtering**

Identifiers: Omnidirectional **stereo** system; **Obstacle detection**; **Stereo** matching

22/3,K/5 (Item 3 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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04295942 E.I. No: EIP95122936386

Title: **Real-time estimation and tracking of optical flow vectors for obstacle detection**
Author: Krueger, W.; Enkelmann, W.; Roessle, S.
Corporate Source: Fraunhofer-Inst fuer Informations- und Datenverarbeitung (IITB), Karlsruhe, Ger
Conference Title: Proceedings of the 1995 Intelligent Vehicles Symposium
Conference Location: Detroit, MI, USA Conference Date: 19950925-19950926
E.I. Conference No.: 44014
Source: Intelligent Vehicles Symposium, Proceedings 1995. IEEE, Piscataway, NJ, USA, 95TH8132. p 304-309
Publication Year: 1995
CODEN: 001680
Language: English

Title: **Real-time estimation and tracking of optical flow vectors for obstacle detection**
...Abstract: of a camera relative to its environment and about the three-dimensional structure of the **imaged** scene. In this contribution we use that information to **detect obstacles** in front of a moving vehicle. Since the detection is based on motion no a...

...frame rate by the custom-designed hardware MiniVISTA. To eliminate outliers and to speed up **obstacle detection** by data reduction the estimated vectors are clustered before they are passed to the obstacle...

...and to separate elevated objects from the ground plane. In continuation of our previous work, **obstacle detection** is regarded as a state estimation problem. This enables us to enlarge the motion **stereo** basis by applying a **Kalman filter** to track optical flow vectors over subsequent **image** frames. Experimental results obtained from **image** sequences recorded with our experimental vehicle are presented. (Author abstract) 12 Refs.

Descriptors: *Intelligent vehicle highway systems; **Collision avoidance**; Optical flows; Object recognition; Vectors; State estimation; **Image analysis**; **Kalman filtering**; Data reduction

Identifiers: **Obstacle detection**; Moving vehicles

25/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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7137003 INSPEC Abstract Number: C2002-02-5260A-002

Title: Adaptive information filter for the fusion of data from the object - detecting sensors of an autonomous vehicle

Author(s): Becker, J.C.

Author Affiliation: Inst. of Control Eng., Tech. Univ. Braunschweig, Germany

Conference Title: Control in Transportation Systems 2000. Proceedings volume from the 9th IFAC Symposium Part vol.1 p.247-52 vol.1

Editor(s): Schnieder, E.; Becker, U.

Publisher: Elsevier Sci, Kidlington, UK

Publication Date: 2001 Country of Publication: UK 2 vol.xiii+622 pp.

ISBN: 0 08 043552 1 Material Identity Number: XX-2000-01195

Conference Title: Proceedings of 9th Symposium on Control in Transportation Systems

Conference Sponsor: IFAC; GES - Social Impact of Autom.; TVA - Autom. Control; TVC - Air Traffic Control Autom.; et al

Conference Date: 13-15 June 2000 Conference Location: Braunschweig, Germany

Language: English

Subfile: C

Copyright 2002, IEE

Title: Adaptive information filter for the fusion of data from the object - detecting sensors of an autonomous vehicle

Abstract: This paper describes an adaptive information filter for the fusion of sensor data of an autonomous vehicle. The vehicle sensor system for object detection consists of a stereo vision sensor, four laserscanners and a radar sensor and provides a high redundancy in the observed area in front of the vehicle. The derivation of the information filter as well as its application to sensor data fusion is presented. Maneuver of observed targets are detected and the filter parameter are adapted accordingly. The information filter fusion is compared to the Kalman filter based measurement fusion.

Descriptors: adaptive Kalman filters ; ...

... stereo image processing

Identifiers: adaptive information filter...

... object - detecting sensors...

... vehicle sensor system...

... object detection ; ...

... stereo vision sensor...

... Kalman filter based measurement fusion...

...autonomous vehicle ;

25/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

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6858926 INSPEC Abstract Number: B2001-04-6135E-059, C2001-04-7445-020

Title: Robust vehicle detection at large distance using low resolution cameras

Author(s): Knoepfel, C.; Schanz, A.; Michaelis, B.

Author Affiliation: Res. Inst., DaimlerChrysler AG, Esslingen, Germany

Conference Title: Proceedings of the IEEE Intelligent Vehicles Symposium 2000 (Cat. No.00TH8511) p.267-72

Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 2000 Country of Publication: USA xxv+738 pp.

ISBN: 0 7803 6363 9 Material Identity Number: XX-2000-02530

U.S. Copyright Clearance Center Code: 0 7803 6363 9/2000/\$10.00

Conference Title: Proceedings of IV 2000 Intelligent Vehicles Symposium

Conference Date: 3-5 Oct. 2000 Conference Location: Dearborn, MI, USA

Language: English

Subfile: B C

Copyright 2001, IEE

Title: Robust vehicle detection at large distance using low resolution cameras

Abstract: This paper describes a robust vehicle detection system which detects vehicles in the rear view of the host car. Two cameras with 12 mm focal length mounted behind the back pane are used. Reliable vehicle recognition up to 150 m and the exact track localization of the vehicles are the key features of the system. The robust stereo algorithm generates object hypotheses which are tracked with Kalman filter. Using the steering angle and the detected obstacles, the driven way of the host vehicle is reconstructed. This information is used for a lane change assistant.

...Descriptors: image recognition...

... image reconstruction...

... Kalman filters ; ...

... object detection ; ...

...road vehicles ; ...

... stereo image processing

Identifiers: robust vehicle detection system...

...robust stereo algorithm...

... Kalman filter ; ...

...lane change assistant

25/3,K/3 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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04915348 Genuine Article#: UR464 No. References: 13

Title: MODEL-BASED VEHICLE TRACKING FROM IMAGE SEQUENCES WITH AN APPLICATION TO ROAD SURVEILLANCE

Author(s): KAN WY; KROGMEIER JV; DOERSCHUK PC

Corporate Source: PURDUE UNIV,SCH ELECT ENGN,1285 ELECT ENGN BLDG/W
LAFAYETTE//IN/47907

Journal: OPTICAL ENGINEERING, 1996, V35, N6 (JUN), P1723-1729

ISSN: 0091-3286

Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: MODEL-BASED VEHICLE TRACKING FROM IMAGE SEQUENCES WITH AN APPLICATION TO ROAD SURVEILLANCE

Abstract: A model-based approach to **vehicle** tracking is proposed and applied to a highway traffic surveillance problem, which is motivated by...

...Systems for traffic management and traveler information services require accurate and wide-area estimates of **vehicle** velocity and traffic spatial and temporal densities. A detection and tracking algorithm is developed that...

...time implementation using inexpensive microprocessors. Detection thresholds are computed based on a statistical model for **vehicle** and background, and the theoretical detector performance is derived. The tracking algorithm filters position estimates from the detection algorithm using a simple **vehicle** dynamic model and the **Kalman filter**. Data association is accomplished with a nearest neighbor filter coupled with a lane-**change** handling logic. (C) 1996 Society of Photo-Optical Instrumentation Engineers.

Research Fronts: 94-0256 001 (2ND-ORDER MOTION; STEREO MATCHING

PRECEDES DICOPTIC MASKING; OBSTACLE DETECTION)

94-6697 001 (DETECTION OF NON-GAUSSIAN SIGNALS; RANDOM NUMBER GENERATOR FOR OCEAN NOISE STATISTICS...

25/3,K/4 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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04539163 Genuine Article#: TQ671 No. References: 14

Title: ONLINE TRAINING OF RECURRENT NEURAL NETWORKS WITH CONTINUOUS TOPOLOGY ADAPTATION

Author(s): OBRADOVIC D

Corporate Source: SIEMENS AG, CORP RES & DEV, ZFE T SN 4 OTTO HAHN RING
6/D-81739 MUNICH//GERMANY/

Journal: IEEE TRANSACTIONS ON NEURAL NETWORKS, 1996, V7, N1 (JAN), P222-228

ISSN: 1045-9227

Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: ONLINE TRAINING OF RECURRENT NEURAL NETWORKS WITH CONTINUOUS TOPOLOGY ADAPTATION

...Abstract: line procedure for training dynamic neural networks with input-output recurrences whose topology is continuously **adjusted** to the complexity of the target system dynamics. The latter is accomplished by **changing** the number of the elements of the network hidden layer whenever the existing topology cannot...

...data. The training mechanism developed in this work is based on the suitably altered extended **Kalman filter** (EKF) algorithm which is simultaneously used for the network parameter **adjustment** and for its state estimation. The network itself consists of a single hidden layer with...

...new data point in order not to forget the previously learned dynamics. The continuous topology **adaptation** is implemented in our algorithm to avoid memory and computational problems of using a regular...

...interfering with the already acquired information. In the case when the target system dynamics are changing over time, we show that a suitable forgetting factor can be used to "unlearn" the...

Research Fronts: 94-5197 002 (RECURRENT NEURAL NETWORKS; ONLINE LEARNING CONTROL OF AUTONOMOUS UNDERWATER VEHICLES ; MULTILINEAR PERCEPTRON CONVERGENCE THEOREM)

94-0256 001 (2ND-ORDER MOTION; STEREO MATCHING PRECEDES DICOPTIC MASKING; OBSTACLE DETECTION)

94-0812 001 (NEURAL NETWORKS; HOPFIELD ASSOCIATIVE MEMORY; EXACTLY SOLVABLE MODEL OF UNSUPERVISED LEARNING)

94-5820 001 (KALMAN FILTER ; DATA ASSIMILATION IN NONLINEAR OCEAN MODELS; SIMPLE ESTIMATION ALGORITHM FOR PERFORMANCE-SEEKING CONTROLLERS; NOISY IMAGE SEQUENCES)

94-6466 001 (RECURSIVE LEAST-SQUARES IDENTIFICATION; MODEL VALIDATION; INPUT-OUTPUT DATA; ROBUST MULTIVARIABLE...)

25/3,K/5 (Item 3 from file: 34)

DIALOG(R)File 34:SciSearch(R) Cited Ref Sci
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03498029 Genuine Article#: ND687 No. References: 18

Title: ADAPTIVE MODEL ARCHITECTURE AND EXTENDED KALMAN -BUCY FILTERS

Author(s): COSTA PJ

Corporate Source: UNIV ST THOMAS,CTR APPL MATH,MS4410,2115 SUMMITAVE/ST PAUL//MN/55105

Journal: IEEE TRANSACTIONS ON AEROSPACE AND ELECTRONIC SYSTEMS, 1994, V30, N2 (APR), P525-533

ISSN: 0018-9251

Language: ENGLISH Document Type: ARTICLE (Abstract Available)

Title: ADAPTIVE MODEL ARCHITECTURE AND EXTENDED KALMAN -BUCY FILTERS

Abstract: In radar systems, extended Kalman -Bucy filters (EKBFs) are used to estimate state vectors of objects in track. Filter models accounting for fundamental aerodynamic forces on reentry vehicles are well known. A general model structure accommodating the dynamics of reentry vehicles in both exoatmospheric and endoatmospheric flight is presented. The associated EKBFs for these various models...

Research Fronts: 92-1274 003 (EXTENDED KALMAN FILTER ; MULTIPLE MODEL ESTIMATION; STEREO FRAMES; MANEUVERING TARGET; IMAGE FUSION ALGORITHMS; 3-DIMENSIONAL REGISTRATION)

92-1285 001 (SLIDING MODE CONTROL OF NONLINEAR-SYSTEMS; OUTPUT-FEEDBACK STABILIZATION; ROBOTIC MANIPULATORS; GLOBAL ADAPTIVE OBSERVERS)

92-3390 001 (NONSYMMETRIC RICCATI MATRIX DIFFERENTIAL-EQUATIONS; COUPLED POINTS; OPTIMAL FILTERING)

?

28/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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8100667 INSPEC Abstract Number: B2004-10-6135-576, C2004-10-5260B-635

Title: Stereo person tracking with adaptive plan-view templates of height and occupancy statistics

Author(s): Harville, M.

Author Affiliation: Hewlett-Packard Labs., Palo Alto, CA, USA

Journal: Image and Vision Computing vol.22, no.2 p.127-42

Publisher: Elsevier,

Publication Date: 1 Feb. 2004 Country of Publication: Netherlands

CODEN: IVCODK ISSN: 0262-8856

SICI: 0262-8856(20040201)22:2L.127:SPTW;1-1

Material Identity Number: F298-2004-002

U.S. Copyright Clearance Center Code: 0262-8856/2004/\$30.00

Language: English

Subfile: B C

Copyright 2004, IEE

Title: Stereo person tracking with adaptive plan-view templates of height and occupancy statistics

Abstract: As the cost of computing per-pixel depth **imagery** from **stereo** cameras in real time has fallen rapidly in recent years, interest in using **stereo** vision for person tracking has greatly increased. Methods that attempt to track people directly in these 'camera-view' depth **images** are confronted by their substantial amounts of noise and unreliable data. Some recent methods have...

... first compute overhead, 'plan-view' statistics of the depth data, and then track people in **images** of these statistics. We describe a new combination of plan-view statistics that better represents the shape of **tracked objects** and provides a more robust substrate for person detection and tracking than prior plan-view algorithms. We also introduce a new method of plan-view person tracking, using adaptive statistical **templates** and Kalman prediction. Adaptive **templates** provide more detailed models of **tracked objects** than prior choices such as Gaussians, and we illustrate that the typical problems with **template**-based tracking in camera-view **images** are easily avoided in a plan-view framework. We **compare** results of our method with those for techniques using different plan-view statistics or person...

...Descriptors: **Kalman filters** ; ...

... **stereo image processing**

Identifiers: **stereo person tracking**...

...adaptive plan-view **template** ; ...

...camera-view **image** ; ...

... **stereo depth images** ; ...

... **Kalman filter**

28/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

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7810527 INSPEC Abstract Number: B2004-01-6135E-155, C2004-01-5260A-017

Title: Vision data fusion for target tracking

Author(s): Zhen, J.; Balasuriya, A.; Challa, S.

Author Affiliation: Sch. of Electr. & Electron. Eng., Nanyang Technol. Univ., Singapore

Conference Title: Proceedings of the Sixth International Conference on Information Fusion p.462-9

Publisher: Univ. New Mexico, Gallup, NM, USA

Publication Date: 2003 Country of Publication: USA CD-ROM pp.

Material Identity Number: XX-2003-02089

Conference Title: Sixth International Conference on Information Fusion

Conference Date: 8-11 July 2003 Conference Location: Cairns, Qld., Australia

Language: English

Subfile: B C

Copyright 2003, IEE

Title: Vision data fusion for target tracking

Abstract: We propose a novel approach and a system for object detection and tracking using video sensors. Optical flow technique is used to derive the dynamic scene properties from the image sequences captured from stereo CCD cameras. Here, it is proposed to use the K-means clustering algorithm along with a template matching algorithm to identify the target from the 2D optical flow fields. Visual depth information of the interested target is calculated based on the disparity of the stereo image. The proposed target - tracking algorithm fuses different optical features to identify the relative position and speed of the target with respect to the camera system. An extended Kalman filter is used to track the target in the image sequence. In order to test the performance of the proposed algorithm, an experiment is conducted using stereo image sequences of a moving object. We present the vision based target identification and tracking algorithm used in mobile robot navigation for a target tracking and following mission. We also discusses the potential applications of this algorithm in mobile robotics.

Descriptors: CCD image sensors...

... image matching ; ...

... image motion analysis...

... image sequences...

... Kalman filters ; ...

... object detection ; ...

... stereo image processing...

... target tracking

...Identifiers: target tracking ; ...

... object detection ; ...

... stereo image sequence...

... stereo CCD camera...

31/3,K/1 (Item 1 from file: 2)

DIALOG(R) File 2:INSPEC

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8160820 INSPEC Abstract Number: B2004-12-6135-284, C2004-12-7445-052

Title: Stereo-based vision system for automotive imminent collision detection

Author(s): Peng Chang; Camus, T. ; Mandelbaum, R.

Author Affiliation: Sarnoff Corp., Princeton, NJ, USA

Conference Title: 2004 IEEE Intelligent Vehicles Symposium (IEEE Cat. No.04TH8730) p.274-9

Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 2004 Country of Publication: USA xxxiv+956 pp.

ISBN: 0 7803 8310 9 Material Identity Number: XX-2004-01583

U.S. Copyright Clearance Center Code: 0 7803 8310 9/2004/\$20.00

Conference Title: 2004 IEEE Intelligent Vehicles Symposium

Conference Date: 14-17 June 2004 Conference Location: Parma, Italy

Language: English

Subfile: B C E

Copyright 2004, IEE

Title: Stereo-based vision system for automotive imminent collision detection

Author(s): Peng Chang; Camus, T. ; Mandelbaum, R.

Identifiers: stereo based vision system ;

31/3,K/2 (Item 2 from file: 2)

DIALOG(R) File 2:INSPEC

(c) 2005 Institution of Electrical Engineers. All rts. reserv.

6606777 INSPEC Abstract Number: C2000-07-3390C-020

Title: Real-time single-workstation obstacle avoidance using only wide-field flow divergence

Author(s): Camus, T. ; Coombs, D.; Herman, M.; Tsai-Hong Hong

Author Affiliation: Nat. Inst. of Stand. & Technol., Moorestown, NJ, USA

Journal: Videre vol.1, no.3

Publication URL: <http://mitpress.mit.edu/e-journals/Videre/>

Publisher: MIT Press,

Publication Date: Summer 1999 Country of Publication: USA

CODEN: VIDRFK ISSN: 1089-2788

Material Identity Number: H350-2000-001

Language: English

Subfile: C

Copyright 2000, IEE

Author(s): Camus, T. ; Coombs, D.; Herman, M.; Tsai-Hong Hong

Abstract: This paper describes a real-time robot vision system that uses only the divergence of the optical flow field for both steering control and...

31/3,K/3 (Item 3 from file: 2)

DIALOG(R) File 2:INSPEC

(c) 2005 Institution of Electrical Engineers. All rts. reserv.

6091290 INSPEC Abstract Number: B9901-6135-038, C9901-5260B-058

Title: A low cost vision system for automotive applications

Author(s): Gregor, R.; Baten, S.; von Holt, V.; Lutzeler, M.; Maurer, M.; Rieder, A.; Dickmanns, E.D.

Author Affiliation: Munchen Univ., Germany

Conference Title: 30th International Symposium on Automotive Technology and Automation. Robotics, Motion and Machine Vision in the Automotive Industries p.195-201

Editor(s): Roller, D.

Publisher: Automotive Autom, Croydon, UK

Publication Date: 1997 Country of Publication: UK 480 pp.

ISBN: 0 947719 97 0 Material Identity Number: XX98-02682

Conference Title: 30th International Symposium on Automotive Technology and Automation. Robotics, Motion and Machine Vision in the Automotive Industries

Conference Date: 16-19 June 1997 Conference Location: Florence, Italy

Language: English

Subfile: B C

Copyright 1998, IEE

Title: A low cost vision system for automotive applications

Author(s): Gregor, R.; Baten, S.; von Holt, V.; Lutzeler, M.; Maurer, M.; Rieder, A.; Dickmanns, E.D.

Abstract: Among other things, high costs have been a major barrier for market introduction of **vision systems** in automobiles. The requirements on computing performance and communication bandwidth could only be satisfied by...

...implementation of the '4-D approach' developed at UBM allow to realize a low-cost **vision system** for automotive applications based on mainstream PC hardware. This new system reaches top rank performance like the predecessors at UBM for a small fraction of their costs. The **vision system** presented has been designed for autonomous road vehicle guidance, but could also be used for...

...Identifiers: low-cost **vision system** ;

31/3,K/4 (Item 1 from file: 8)

DIALOG(R)File 8:EI Compendex(R)

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07041384 E.I. No: EIP04408382195

Title: Stereo-based vision system for automotive imminent collision detection

Author: Chang, Peng; Camus, Theodore ; Mandelbaum, Robert

Corporate Source: Sarnoff Corporation, Princeton, NJ 08543, United States

Conference Title: 2004 IEEE Intelligent Vehicles Symposium

Conference Location: Parma, Italy Conference Date: 20040614-20040617

E.I. Conference No.: 63502

Source: IEEE Intelligent Vehicles Symposium, Proceedings 2004 IEEE Intelligent Vehicles Symposium 2004.

Publication Year: 2004

Language: English

Title: Stereo-based vision system for automotive imminent collision detection

Author: Chang, Peng; Camus, Theodore ; Mandelbaum, Robert

31/3,K/5 (Item 2 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
(c) 2005 Elsevier Eng. Info. Inc. All rts. reserv.

06139077 E.I. No: EIP02397099557

Title: **Methodology and apparatus for using the human iris as a robust biometric**

Author: DellaVecchia, Michael; Chmielewski, Thomas; Camus, Ted ; Salganicoff, Marcos; Negin, Michael
Corporate Source: Wills Eye Hospital, Philadelphia, PA, United States
Conference Title: Proceedings of Ophthalmic Technologies VIII
Conference Location: San Jose, CA, United States Conference Date: 19980124-19980125

E.I. Conference No.: 59608

Source: Proceedings of SPIE - The International Society for Optical Engineering v 3246 1998. p 65-74

Publication Year: 1998

CODEN: PSISDG ISSN: 0277-786X

Language: English

Author: DellaVecchia, Michael; Chmielewski, Thomas; Camus, Ted ; Salganicoff, Marcos; Negin, Michael

...Abstract: non-visible near infrared illumination. The initial image acquisition uses a stereo camera pair OD **vision**) **system** to locate the subject within a relatively large operational volume. The resulting coordinates of the...

31/3,K/6 (Item 3 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
(c) 2005 Elsevier Eng. Info. Inc. All rts. reserv.

05786973 E.I. No: EIP01025528372

Title: **EMS-vision: application to hybrid adaptive cruise control**

Author: Hofmann, U.; Rieder, A. ; Dickmanns, E.D.
Corporate Source: Universitaet der Bundeswehr Muenchen (UBM), Neubiberg, Ger

Conference Title: Proceedings of the IEEE Intelligent Vehicles Symposium 2000

Conference Location: Dearborn, MI, USA

Source: IEEE Intelligent Vehicles Symposium, Proceedings 2000. IEEE, Piscataway, NJ, USA, 00TH8511. p 468-473

Publication Year: 2000

CODEN: 001680

Language: English

Author: Hofmann, U.; Rieder, A. ; Dickmanns, E.D.

Descriptors: *Intelligent vehicle highway systems; Velocity control; Adaptive control **systems** ; Computer **vision** ; Radar tracking; Image sensors

31/3,K/7 (Item 4 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
(c) 2005 Elsevier Eng. Info. Inc. All rts. reserv.

05169657 E.I. No: EIP98114475067

Title: **Vision for autonomous mobility: Image processing on the VFE-200**

Author: Mandelbaum, R. ; Hansen, M.; Burt, P.; Baten, S.

Corporate Source: Sarnoff Corp, Princeton, NJ, USA
Conference Title: Proceedings of the 1998 IEEE International Symposium on Intelligent Control, ISIC
Conference Location: Gaithersburg, MD, USA Conference Date: 19980914-19980917
E.I. Conference No.: 49224
Source: IEEE International Symposium on Intelligent Control - Proceedings 1998. IEEE, Piscataway, NJ, USA, 98CH36262. p 671-676
Publication Year: 1998
CODEN: 85PUAU
Language: English

Author: Mandelbaum, R. ; Hansen, M.; Burt, P.; Baten, S.
...Descriptors: control; Mobile robots; Computer vision; Motion planning; Collision avoidance; Algorithms; Control system synthesis; Real time systems ; Stereo vision ; Image reconstruction

31/3,K/8 (Item 5 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
(c) 2005 Elsevier Eng. Info. Inc. All rts. reserv.

04708688 E.I. No: EIP97063676645
Title: Real-time quantized optical flow
Author: Camus, Ted
Corporate Source: Natl Inst of Standards and Technology, Gaithersburg, MD, USA
Source: Real-Time Imaging v 3 n 2 Apr 1997. p 71-86
Publication Year: 1997
CODEN: REIMFQ ISSN: 1077-2014
Language: English

Author: Camus, Ted
Descriptors: *Computer vision ; Real time systems ; Optical flows; Robotics; Algorithms; Image processing; Computational complexity; Performance; Computer hardware; Computer workstations

31/3,K/9 (Item 6 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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04180062 E.I. No: EIP95022570247
Title: Calculating time-to-collision with real-time optical flow
Author: Camus, Ted
Corporate Source: Brown Univ. and MPI fuer Biologische Kybernetik, Providence, RI, USA
Conference Title: Visual Communications and Image Processing '94
Conference Location: Chicago, IL, USA Conference Date: 19940925-19940929
E.I. Conference No.: 22058
Source: Proceedings of SPIE - The International Society for Optical Engineering v 2308 n p 1 1994. p 661-670
Publication Year: 1994
CODEN: PSISDG ISSN: 0277-786X ISBN: 0-8194-1638-X
Language: English

Author: Camus, Ted

Descriptors: *Computer vision ; Robotics; Real time systems ; Algorithms; Collision avoidance; Motion planning

31/3,K/10 (Item 1 from file: 65)
DIALOG(R)File 65:Inside Conferences
(c) 2005 BLDSC all rts. reserv. All rts. reserv.

03813889 INSIDE CONFERENCE ITEM ID: CN040069161
Combining EMS-Vision and Helicopter Stereo for Obstacle Avoidance of Autonomous Vehicles
Siedersberger, K.-H.; Pellkofer, M.; Lutzeler, M.; Dickmanns, E. D.;
Rieder, A. ; Mandelbaum, R. ; Bogoni, L.
CONFERENCE: International workshop on computer vision systems-2nd
LECTURE NOTES IN COMPUTER SCIENCE, 2001; VOL 2095 P: 139-156
Berlin, Springer, 2001
ISSN: 0302-9743 ISBN: 3540422854
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Schiele, B.; Sagerer, G.
CONFERENCE LOCATION: Vancouver 2001; Jul (200107) (200107)
NOTE:
Also known as ICVS 2001

Siedersberger, K.-H.; Pellkofer, M.; Lutzeler, M.; Dickmanns, E. D.;
Rieder, A. ; Mandelbaum, R. ; Bogoni, L.
DESCRIPTORS: computer vision systems ; ICVS

31/3,K/11 (Item 2 from file: 65)
DIALOG(R)File 65:Inside Conferences
(c) 2005 BLDSC all rts. reserv. All rts. reserv.

03813888 INSIDE CONFERENCE ITEM ID: CN040069150
Radar and Vision Data Fusion for Hybrid Adaptive Cruise Control on Highways
Hofmann, U.; **Rieder, A. ; Dickmanns, E. D.**
CONFERENCE: International workshop on computer vision systems-2nd
LECTURE NOTES IN COMPUTER SCIENCE, 2001; VOL 2095 P: 125-138
Berlin, Springer, 2001
ISSN: 0302-9743 ISBN: 3540422854
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Schiele, B.; Sagerer, G.
CONFERENCE LOCATION: Vancouver 2001; Jul (200107) (200107)
NOTE:
Also known as ICVS 2001

Hofmann, U.; **Rieder, A. ; Dickmanns, E. D.**
DESCRIPTORS: computer vision systems ; ICVS

31/3,K/12 (Item 3 from file: 65)
DIALOG(R)File 65:Inside Conferences
(c) 2005 BLDSC all rts. reserv. All rts. reserv.

03330378 INSIDE CONFERENCE ITEM ID: CN035198866
Trinocular Divergent Stereo Vision
Rieder, A.
CONFERENCE: vol 1; Computer vision International conference on pattern

recognition-13th
INTERNATIONAL CONFERENCE ON PATTERN RECOGNITION, 1996; 13TH; VOLS 1-4
P: 859-863
IEEE Computer Society Press, 1996
ISSN: 1051-4651 ISBN: 081867282X; 0818672706
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE SPONSOR: IEEE Computer Society
CONFERENCE LOCATION: Vienna
CONFERENCE DATE: Aug 1996 (199608) (199608)

NOTE:

Also known as IAPR

Rieder, A.

DESCRIPTORS: pattern recognition; IAPR; computer vision ; robotic
systems ; signal analysis

?

38/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2005 Institution of Electrical Engineers. All rts. reserv.

7316358 INSPEC Abstract Number: C2002-08-3360L-072

Title: Guidance and relative navigation for autonomous rendezvous in a circular orbit

Author(s): Hablani, H.B.; Tapper, M.L.; Dana-Bashian, D.J.

Author Affiliation: Flight Syst. Design & Anal., The Boeing Co., Huntington Beach, CA, USA

Journal: Journal of Guidance, Control, and Dynamics vol.25, no.3 p. 553-62

Publisher: AIAA,

Publication Date: May-June 2002 Country of Publication: USA

CODEN: JGCDDT ISSN: 0731-5090

SICI: 0731-5090(200205/06)25:3L.553:GRNA;1-T

Material Identity Number: C746-2002-004

U.S. Copyright Clearance Center Code: 0731-5090/02/\$10.00

Language: English

Subfile: C

Copyright 2002, IEE

...Abstract: autonomous guidance of spacecraft to approach, to fly around, and to depart from a target vehicle in a circular orbit are presented. The algorithms are based on the closed-form solution of linear Clohessy-Wiltshire equations. The approach and departure algorithms are adaptations of the glide slope guidance used in the past for rendezvous and proximity operations of the space shuttle with other vehicles with astronauts in the guidance loop. The multipulse glide slope algorithms are general, capable of...

... a translation motion of spacecraft in any direction in space autonomously, decelerating while approaching a target or a nearby location, and accelerating while receding. The fly-around algorithm enables the spacecraft to circumnavigate a target...

... of the spacecraft relative to the target. This relative navigation is performed with an extended Kalman filter. Several scenarios are simulated to illustrate the guidance algorithms and relative navigation.

...Descriptors: Kalman filters; ...

...space vehicles

...Identifiers: Kalman filter;

38/3,K/2 (Item 1 from file: 6)

DIALOG(R)File 6:NTIS

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0569752 NTIS Accession Number: AD-915 627/4/XAB

Time, Space, Position, Information (TSPI) Study

(Final rept. Jul 72-Jan 73)

Mellenger, T. H. ; Dziuba, C. ; Jenney, W. P. ; Newton, D. J. ; Meagher, D. P.

Calspan Corp Buffalo N Y

Corp. Source Codes: 407727

Report No.: CALSPAN-TD-5187-D-1; RADC-TR-73-243

Oct 73 236p

Journal Announcement: GRAI7622
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...for a Continental Operating Range (COR). The tracking requirements for the COR are twofold. The **near** term (or initial system) requirements (1-5 years) are for tracking 16 aircraft within a...

...or future system) requirements (5-10 years) are for tracking 60 aircraft and 40 ground **vehicles** within a 200 n.mi. diameter circle. The study was to provide guidelines of techniques that would satisfy **near** term requirements as well as having long term growth potential for satisfying the far term...

... Major emphasis was given to the analysis of hardware developed ranging systems that could, with **modifications**, satisfy the Air Force's **near** term tracking requirements. The two systems which will most likely satisfy the **near** term requirements are Cubic Corporation's Air Combat Maneuvering Range (ACMR) and General Dynamic's...

...Descriptors: systems; Computers; Lasers; Cathode ray tubes; Loran; Radio navigation; Tacan; Inertial navigation; Light emitting diodes; **Kalman filtering**; Position(**Location**); Computer programs; Aircraft; **Targets**; Multiple operation; Human factors engineering; Costs; Real time; Liquid crystals; Plasma medium; Interferometers

38/3,K/3 (Item 1 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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06076433 E.I. No: EIP02266995475
Title: Guidance and relative navigation for autonomous rendezvous in a **circular orbit**
Author: Tapper, Myron L.; Dana-Bashian, David J.; Hablani, H.B.
Corporate Source: The Boeing Company, Huntington Beach, CA 92647, United States
Source: Journal of Guidance, Control, and Dynamics v 25 n 3 May/June 2002. p 553-562
Publication Year: 2002
CODEN: JGCODS ISSN: 0731-5090
Language: English

...Abstract: autonomous guidance of spacecraft to approach, to fly around, and to depart from a target **vehicle** in a **circular orbit** are presented. The algorithms are based on the closed-form solution of linear Clohessy-Wiltshire equations. The approach and departure algorithms are **adaptations** of the glideslope guidance used in the past for rendezvous and proximity operations of the space shuttle with other **vehicles** with astronauts in the guidance loop. The multipulse glideslope algorithms are general, capable of effecting a translation motion of spacecraft in any direction in space autonomously, decelerating while approaching a **target** or a **nearby location**, and accelerating while receding. The flyaround algorithm enables the spacecraft to circumnavigate a target spacecraft...

...of the spacecraft relative to the target. This relative navigation is

performed with an extended **Kalman filter** using range and angle measurements of the target relative to the spacecraft focal plane and...

Descriptors: *Navigation systems; Electronic guidance systems; Spacecraft ; Space rendezvous; Orbits; Navigation; **Adaptive** algorithms; Proximity sensors; **Collision avoidance** ; Motion control; Acceleration control; Position control; Velocity control

?

43/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2005 Institution of Electrical Engineers. All rts. reserv.

6118596 INSPEC Abstract Number: C9902-3360F-007

Title: Performance evaluation of UGV obstacle detection with CCD/FLIR stereo vision and LADAR

Author(s): Matthies, L.; Litwin, T.; Owens, K.; Rankin, A.; Murphy, K.; Coombs, D.; Gilsinn, J.; Tsai hong; Legowik, S.; Nashman, M.; Yoshimi, B.

Author Affiliation: Jet Propulsion Lab., California Inst. of Technol., Pasadena, CA, USA

Conference Title: Proceedings of the 1998 IEEE International Symposium on Intelligent Control (ISIC) held jointly with IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA) Intelligent Systems and Semiotics (ISAS) (Cat. No.98CH36262)) p.658-70

Publisher: IEEE, New York, NY, USA

Publication Date: 1998 Country of Publication: USA 899 pp.

ISBN: 0 7803 4423 5 Material Identity Number: XX98-02019

U.S. Copyright Clearance Center Code: 0 7803 4423 5/98/\$10.00

Conference Title: Proceedings of the 1998 IEEE International Symposium on Intelligent Control (ISIC) held jointly with IEEE International Symposium on Computational Intelligence in Robotics and Automation (CIRA) Intelligent Systems and Semiotics (ISAS) (Cat. No.98CH36262)

Conference Sponsor: IEEE Int. Symposium on Intelligent Control (ISIC); Int. Symposium on Comput. Intelligence in Robotics & Autom. (CIRA); Intelligent Syst. & Semiotics (ISAS); NIST; IEEE Control Syst. Soc. (CSS); NSF; U.S. Army Res. Office (ARO); IEEE Neural Network Council (NNC); IEEE Robotics & Autom. Soc. (RAS)

Conference Date: 14-17 Sept. 1998 Conference Location: Gaithersburg, MD, USA

Language: English

Subfile: C

Copyright 1998, IEE

Title: Performance evaluation of UGV obstacle detection with CCD/FLIR stereo vision and LADAR

Abstract: The next phase of unmanned ground **vehicle** (UGV) development, the Demo III programme, aims to enable round-the-clock operation with autonomous...

... such driving speeds, and describes data collection and performance evaluation efforts with three different range **imaging systems** : 1) **stereo vision** with CCD cameras, 2) **stereo** vision with InSb FLIR cameras operating in the 3-5 μ m band, and 3) the Dornier EBK LADAR. The LADAR and the FLIR **stereo** are applicable to day and night operation; the CCD **stereo** to day operation only. This paper describes the data set and preliminary **obstacle detection** results obtained. Ongoing performance evaluation with this data set will guide **obstacle detection** sensor selection and development for the Demo III Programme.

Descriptors: **collision avoidance...**

... **stereo image processing...**

... **vehicles**

...Identifiers: **obstacle detection** ; ...

...FLIR **stereo vision...**

...unmanned ground vehicle ;

43/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC
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5501632 INSPEC Abstract Number: C9703-3360B-070
Title: Visual navigation along reference lines and collision avoidance for autonomous vehicles
Author(s): Kato, S.; Tomita, K.; Tsugawa, S.
Author Affiliation: Mech. Eng. Lab., AIST, Tsukuba, Japan
Conference Title: Proceedings of the 1996 IEEE Intelligent Vehicles Symposium (Cat. No.96TH8230) p.385-90
Publisher: IEEE, New York, NY, USA
Publication Date: 1996 Country of Publication: USA viii+427 pp.
ISBN: 0 7803 3652 6 Material Identity Number: XX96-02877
U.S. Copyright Clearance Center Code: 0 7803 3652 6/96/\$5.00
Conference Title: Proceedings of Conference on Intelligent Vehicles
Conference Sponsor: IEEE Ind. Electron. Soc.; Assoc. Electron., Technol. Automobile Traffic & Driving; IEEE VTS Tokyo Chapter; Int. Assoc. Traffic & Safety Sci.; Japanese Soc. Artificial Intelligence; Mech. Eng. Lab., AIST, MITI; Seikei Univ.; Soc. Automotive Eng. Japan; Inst. Electr. Eng. Japan; IEICE of Japan; Inst. Image Electron. Eng. Japan; Inst. Syst., Control & Inf. Eng.; Japan Soc. Mech. Eng.; Robotics Soc. Japan; Soc. Instrum. & Control Eng
Conference Date: 19-20 Sept. 1996 Conference Location: Tokyo, Japan
Language: English
Subfile: C
Copyright 1997, IEE

Title: Visual navigation along reference lines and collision avoidance for autonomous vehicles
Abstract: This paper describes the algorithms for generation of paths and lateral control of an unmanned vehicle with a stereo vision system for autonomous navigation and collision avoidance. One camera of the stereo vision system detects reference lines along which the vehicle is guided, and the stereo vision system detects obstacles. The lateral control consists of steps of the reference line detection, obstacle detection, path generation, and calculation of lateral control. The coefficient of the cubic curve that approximates...
...Descriptors: automobiles ; ...
... stereo image processing
...Identifiers: collision avoidance...
...autonomous vehicles ; ...
...unmanned vehicle ; ...
... stereo vision system ; ...
... obstacle detection ;

43/3,K/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC
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5224606 INSPEC Abstract Number: C9605-3390C-029

Title: **Stereovision systems for autonomous mobile robots**

Author(s): Takeno, J.; Rembold, U.

Author Affiliation: Sch. of Sci. & Technol., Meiji Univ., Kawasaki, Japan
Conference Title: Intelligent Autonomous Systems. IAS-4. Proceedings of

the International Conference p.26-41

Editor(s): Rembold, U.; Dillmann, R.; Hertzberger, L.O.; Kanade, T.

Publisher: IOS Press, Amsterdam, Netherlands

Publication Date: 1995 Country of Publication: Netherlands ix+730 pp.

Material Identity Number: XX95-00339

Conference Title: Proceedings of International Conference on Intelligent Autonomous Systems

Conference Date: 27-30 March 1995 Conference Location: Karlsruhe, Germany

Language: English

Subfile: C

Copyright 1996, IEE

Abstract: This paper discusses **stereo vision systems** in general and introduces one of such a system for the navigation of an autonomous mobile robot. The **system** uses passive type **vision** comprising two objective lenses and one CCD camera. It is a pure optical system with no internal mechanical moving components. The camera is of a split **images** design. It splits the two **images** obtained by individual special masks placed behind the right and left objective lenses and projects the **images** on a CCD camera, providing an **auto** -focusing sub-system. The system uses interpolation and statistical methods to **detect objects** such as a human on the path along which a mobile robot drives. The data...

...KAMRO (Karlsruhe Autonomous Mobile Robot) of the Karlsruhe University in Germany, and its ability to **detect objects** was demonstrated.

Descriptors: CCD **image** sensors...

... **stereo image processing**

...Identifiers: **stereo vision systems** ; ...

...split **images** ; ...

... **auto** -focusing...

... **collision avoidance**

43/3,K/4 (Item 4 from file: 2)

DIALOG(R)File 2:INSPEC

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04076995 INSPEC Abstract Number: C9203-5260B-037

Title: **A stereo vision system for real time obstacle avoidance in unknown environment**

Author(s): Ferrari, F.; Grosso, E.; Sandini, G.; Magrassi, M.

Author Affiliation: Dept. of Comput. Commun. & Syst. Sci., Genova Univ., Italy

Conference Title: Proceedings. IROS '90. IEEE International Workshop on Intelligent Robots and Systems '90. Towards a New Frontier of Applications (Cat. No.90TH0332-7) p.703-8 vol.2

Publisher: IEEE, New York, NY, USA

Publication Date: 1990 Country of Publication: USA 2 vol.
(xxxx+1046+suppl.) pp.
Conference Sponsor: IEEE; Robotics Soc. Japan; et al
Conference Date: 3-6 July 1990 Conference Location: Ibaraki, Japan
Language: English
Subfile: C

Title: A stereo vision system for real time obstacle avoidance in unknown environment

Abstract: A stereo vision system for detecting and avoiding obstacles in real time in an unknown environment is described. This is only the low level...

... mobile robot based on the Brook's subsumption architecture. This level is based on a stereo vision algorithm that uses precomputed measurement of the ground floor disparity, and online acquired grey-level stereo images . The floor is supposed to be planar. The algorithm has been successfully implemented on a mobile vehicle , that is capable of moving around in an unpredictable environment, like a laboratory, without collision .

...Identifiers: stereo vision system ; ...

...grey-level stereo images

43/3,K/5 (Item 1 from file: 8)
DIALOG(R)File 8:EI Compendex(R)
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06296847 E.I. No: EIP03077362902

Title: Stereo -based collision avoidance system for urban traffic

Author: Moriya, Takashi; Ishikawa, Naoto; Sasaki, Kazuyuki; Nakajima, Masato

Corporate Source: Dept. of Electronics and Elec. Eng. Keio University, Keio, Japan

Conference Title: Applications of Digital Image Processing XXV

Conference Location: Seattle, WA, United States **Conference Date:** 20020708-20020710

E.I. Conference No.: 60678

Source: Proceedings of SPIE - The International Society for Optical Engineering v 4790 2002. p 417-424

Publication Year: 2002

CODEN: PSISDG **ISSN:** 0277-786X

Language: English

Title: Stereo -based collision avoidance system for urban traffic

Abstract: Numerous car accidents occur on urban road. However, researches done so far on driving assistance are subjecting...

...road; drivers may lack the sense of awareness of the lane mark. We propose a collision avoidance system, which can be applied to both highways and urban traffic environment. In our system, stereo cameras are set in front of a vehicle and the captured images are processed through a computer. We create a Projected Disparity Map (PDM) from stereo image pair, which is a disparity histogram taken along ordinate direction of obtained disparity image . When there is an obstacle in front, we can detect it by finding a peak...

...and a steering sensor, the stop distance and the radius of curvature of the self- vehicle are calculated, in order to set the observation-required area, which does not depend on...

...level will be computed from the distance and the relative speed to the closest approaching object detected within the observation-required area. The method has been tested in urban traffic scenes and...

Descriptors: *Imagin g systems ; Collision avoidance; Stereo vision ; Highway traffic control; Cameras; Image analysis; Computer simulation; Speed indicators; Steering; Calculations; Highway markings; Object recognition; Image sensors

Identifiers: Urban traffic; Stereo cameras; Projected disparity map; Disparity histogram

43/3,K/6 (Item 2 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
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05309011 E.I. No: EIP99074709202

Title: New neural real-time implementation for obstacle detection using linear stereo vision

Author: Ruichek, Yassine; Postaire, Jack-Gerard
Corporate Source: Universite des Sciences et Technologies de Lille, Villeneuve d'Ascq, Fr

Source: Real-Time Imaging v 5 n 2 1999. p 141-153

Publication Year: 1999

CODEN: REIMFQ ISSN: 1007-2014

Language: English

Title: New neural real-time implementation for obstacle detection using linear stereo vision

Abstract: This paper presents a neural vision system for real-time obstacle detection in front of a moving vehicle using linear stereo vision. The key problem is the correspondence task which consists of matching features in two stereo images that are projections of the same physical entity in the three-dimensional world. The linear stereo correspondence problem is formulated as an optimization task. An energy function, which represents the constraints...
...Hopfield neural network for minimization. The system has been evaluated with experimental results on real stereo images. (Author abstract) 18 Refs.

Descriptors: *Stere o vision; Neural networks; Real time systems; Collision avoidance; Optimization; Constraint theory

Identifiers: Linear stereo vision

43/3,K/7 (Item 3 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
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04641551 E.I. No: EIP97033547217

Title: Drive assist system using stereo image recognition

Author: Saneyoshi, Keiji
Corporate Source: Subaru Research Cent Co, Ltd, Tokyo, Jpn
Conference Title: Proceedings of the 1996 IEEE Intelligent Vehicles Symposium
Conference Location: Tokyo, Jpn Conference Date: 19960919-19960920

E.I. Conference No.: 46130
Source: IEEE Intelligent Vehicles Symposium, Proceedings 1996. IEEE,
Piscataway, NJ, USA, 96TH8230. p 230-235
Publication Year: 1996
CODEN: 001680
Language: English

Title: Drive assist system using stereo image recognition
Abstract: A safety vehicle using an obstacle detection system with a stereo image sensor has been developed. The stereo image sensor was chosen as a more suitable sensor, compared to a laser radar or a millimeter wave radar. The matching method adopted for this stereo system is the small area based matching to yield a distance distribution image. The road shape and solids are recognized from the distance distribution image. This safety vehicle has three functions for the 'avoidance stage' proposed in ASV (Advanced Safety Vehicle) project as follows: (1) a collision alarm system. (2) an autonomous collision avoidance system. (3) lane keeping alarm system. Reduction rates by this safety vehicle for a rear-end collision and a collision encountered at a intersection were estimated. It was recognized that the system was greatly effective for both type of collisions. (Author abstract) 3 Refs.

Descriptors: *Intelligent vehicle highway systems; Obstacle detectors; Image sensors; Stereo vision; Accident prevention; Alarm systems; Collision avoidance

Identifiers: Advanced safety vehicles (ASV); Driver assist systems

43/3,K/8 (Item 4 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
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04608817 E.I. No: EIP97013502704
Title: Stereo vision system for real-time automotive obstacle detection
Author: Bertozzi, Massimo; Broggi, Alberto; Faccioli, Alessandra
Corporate Source: Universita di Parma, Parma, Italy
Conference Title: Proceedings of the 1996 IEEE International Conference on Image Processing, ICIP'96. Part 2 (of 3)
Conference Location: Lausanne, Switz **Conference Date:** 19960916-19960919
E.I. Conference No.: 45905
Source: IEEE International Conference on Image Processing v 2 1996. IEEE, Los Alamitos, CA, USA, 96CH35919. p 681-684
Publication Year: 1996
CODEN: 85QTAW
Language: English

Title: Stereo vision system for real-time automotive obstacle detection
Abstract: This work presents a system for obstacle detection in pair of images acquired by a stereo vision device installed on a moving vehicle. The whole system is structured in a pipeline of two different computational engines: a massively parallel architecture, PAPRICA, devoted to low-level image processing and a traditional serial architecture running medium-level tasks. A geometrical transformation, based on the assumption of a flat road in front of the vehicle, is performed to remove the perspective effect from both images. The difference between the results is used for the detection of free-space in front of the vehicle,

thus allowing to avoid the high computational tasks involved in traditional **stereo** vision approaches; the geometrical transformation is performed by a specific hardware device integrated in PAPRICA architecture. The system was tested on MOB-LAB experimental land **vehicle**, which was driven for more than 3000 km along extra-urban roads and freeways at...

...demonstrated its robustness with respect to shadows and changing illumination conditions, different road textures, and **vehicle** movement. (Author abstract) 13 Refs.

Descriptors: ***Stere o vision**; Computer architecture; Pattern recognition systems; Mathematical transformations; Collision avoidance; Computer vision ; Parallel processing **systems**

43/3,K/9 (Item 5 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
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04295980 E.I. No: EIP95122936424

Title: Real-time neural vision for obstacle detection using linear cameras

Author: Ruichek, Yassine; Postaire, Jack-Gerard
Corporate Source: Universite des Sciences et Technologies de Lille,
Villeneuve d'Ascq, Fr

Conference Title: Proceedings of the 1995 Intelligent Vehicles Symposium
Conference Location: Detroit, MI, USA Conference Date:
19950925-19950926

E.I. Conference No.: 44014
Source: Intelligent Vehicles Symposium, Proceedings 1995. IEEE,
Piscataway, NJ, USA, 95TH8132. p 524-529
Publication Year: 1995
CODEN: 001680
Language: English

Title: Real-time neural vision for obstacle detection using linear cameras

Abstract: This paper presents a neural **vision system** for real-time **obstacle detection** in front of **vehicles** using a linear **stereo** vision set-up. The problem addressed here consists in identifying features in two **images** that are projections of the same physical entity in the three-dimensional world. The linear **stereo** correspondence problem is formulated as an optimization problem. An energy function, which represents the constraints...

...Hopfield neural network for minimization. The system has been evaluated with experimental results on real **stereo images**. (Author abstract) 6 Refs.

Descriptors: *Computer vision; Cameras; Edge detection; Neural networks; Real time systems; Collision avoidance; Automobile electronic equipment ; Computational methods; Optimization

Identifiers: Linear cameras; **Obstacle detection** ; Real time neural vision; Hopfield neural networks; Real **stereo images**

43/3,K/10 (Item 6 from file: 8)

DIALOG(R)File 8:EI Compendex(R)
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04295914 E.I. No: EIP95122936358

Title: New edge detector for obstacle detection with a linear stereo vision system
Author: Wan, Yue Feng; Cabestaing, Francois; Burie, Jean-Christophe
Corporate Source: Universite des Sciences et Technologies de Lille, Villeneuve d'Ascq, Fr
Conference Title: Proceedings of the 1995 Intelligent Vehicles Symposium
Conference Location: Detroit, MI, USA Conference Date: 19950925-19950926
E.I. Conference No.: 44014
Source: Intelligent Vehicles Symposium, Proceedings 1995. IEEE, Piscataway, NJ, USA, 95TH8132. p 130-135
Publication Year: 1995
CODEN: 001680
Language: English

Title: New edge detector for obstacle detection with a linear stereo vision system

Abstract: The problem addressed in this paper is obstacle detection in front of a moving vehicle. One of the main difficulties encountered when scanning stereo pairs of linear images is the extraction of significant features from the left and right images. The better the features, the more reliable is the matching procedure for 3-D reconstruction of the car environment. In this paper we present a new edge detector which has been developed for...

Descriptors: *Computer vision; Edge detection; Stereo vision; Feature extraction; Three dimensional; Image reconstruction; Object recognition; Collision avoidance; Pattern recognition systems

Identifiers: Obstacle detection ; Linear stereo vision system

43/3,K/11 (Item 7 from file: 8)

DIALOG(R) File 8:Ei Compendex(R)

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04295903 E.I. No: EIP95122936347

Title: Obstacle detection for unmanned ground vehicles : A progress report
Author: Matthies, Larry; Kelly, Alonzo; Litwin, Todd; Tharp, Greg
Corporate Source: California Inst of Technology, Pasadena, CA, USA
Conference Title: Proceedings of the 1995 Intelligent Vehicles Symposium
Conference Location: Detroit, MI, USA Conference Date: 19950925-19950926
E.I. Conference No.: 44014
Source: Intelligent Vehicles Symposium, Proceedings 1995. IEEE, Piscataway, NJ, USA, 95TH8132. p 66-71
Publication Year: 1995
CODEN: 001680
Language: English

Title: Obstacle detection for unmanned ground vehicles : A progress report

Abstract: To detect obstacles during off-road autonomous navigation, unmanned ground vehicles (UGV's) must sense terrain geometry and composition (ie. terrain type) under day, night, and low-visibility conditions. To sense terrain geometry, we have developed a real-time stereo vision system that uses a Datacube MV-200 and a 68040 CPU board to produce 256 multiplied by 240-pixel range images in about 0.6

seconds/frame. To sense terrain type, we are using the same computing hardware with red and near infrared **imagery** to classify 256 multiplied by 240-pixel frames into vegetation and non-vegetation regions at...

...navigation over the past five years. This work has been the first to show that **stereo** vision can be practical for autonomous UGV navigation, and is now the first to show...

Descriptors: ***Collision avoidance**; Off road **vehicles** ; Navigation **systems** ; **Stereo vision** ; Pattern recognition **systems** ; Infrared **imaging** ; **Image sensors**; Mobile robots; Proximity sensors

Identifiers: **Obstacle detection** ; Unmanned ground **vehicles** ; Terrain geometry; Terrain type

43/3,K/12 (Item 1 from file: 99)
DIALOG(R)File 99:Wilson Appl. Sci & Tech Abs
(c) 2005 The HW Wilson Co. All rts. reserv.

1846406 H.W. WILSON RECORD NUMBER: BAST99000787
Autonomous driving goes downtown
Franke, Uwe; Gavrila, Dariu; Gorzig, Steffen
IEEE Intelligent Systems & Their Applications v. 13 no6 (Nov./Dec. '98) p.
40-8
DOCUMENT TYPE: Feature Article ISSN: 1094-7167

...ABSTRACT: and appropriate algorithms and approaches for vision-module control in urban traffic are discussed. The **system** features **stereo vision** for depth-based **obstacle detection** and **tracking** and a framework for monocular detection and **identification** of relevant **objects** without requiring a supercomputer. The system is discussed in terms of urban applications and vision tasks, **stereo**-based **obstacle detection** and **tracking**, **object recognition**, and the combination of these factors.

DESCRIPTORS: **Collision avoidance systems** (**Motor vehicles**); ...

... **Automobiles** --...

...**Real time imaging** ; ;

43/3,K/13 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal
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14567379 PASCAL No.: 00-0233873
Robust real-time ground plane motion compensation from a moving vehicle
KRUEGER W
Fraunhofer-Inst fuer Informations- und Datenverarbeitung (IITB),
Karlsruhe, Germany
Journal: Machine Vision and Applications, 1999, 11 (4) 203-212
Language: English

Robust real-time ground plane motion compensation from a moving vehicle
One method to detect **obstacles** from a **vehicle** moving on a planar road surface is the analysis of motion-compensated difference **images**. In this contribution, a motion compensation algorithm is presented, which computes the required **image**-warping parameters from an estimate of the relative motion between camera and ground plane. The proposed algorithm

estimates the warping parameters from displacements at **image** corners and **image** edges. It exploits the estimated confidence of the displacements to cope robustly with outliers. Knowledge...

...to stabilize the estimation process when there is not enough information available in the measured **image** displacements. The motion compensation algorithm has been integrated with modules for **obstacle detection** and **lane tracking**. This system has been integrated in experimental **vehicles** and runs in real time with an overall cycle of 12.5 Hz on low...

English Descriptors: Ground plane motion compensations; Driver assistance systems ; Application; Stereo vision ; Image analysis; Real time systems; Collision avoidance; Algorithms; Cameras; Signal detection; Image reconstruction; Computer vision; Theory

French Descriptors: Application; Vision stereoscopique; Analyse **image** ; Systeme temps reel; Prevention esquive **collision** ; Algorithme; Appareil photographique; Detection signal; Reconstruction **image** ; Vision ordinateur; Theorie

43/3,K/14 (Item 2 from file: 144)

DIALOG(R)File 144:Pascal

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13811903 PASCAL No.: 98-0527416

The experience of the ARGO autonomous vehicle
Signal processing, sensor fusion, and target recognition VII : Orlando
FL, 13-15 April 1998

BERTOZZI M; BROGGI A; CONTE G; FASCIOLI A
VERLY Jacques G, ed
Dipartimento di Ingegneria dell'Informazione, Universita di Parma, 43100
Parma, Italy

International Society for Optical Engineering, Bellingham WA, United
States.

Enhanced and synthetic vision. Conference (Orlando FL USA) 1998-04-13
Journal: SPIE proceedings series, 1998, 3364 218-229
Language: English

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The experience of the ARGO autonomous vehicle

This paper presents and discusses the first results obtained by the GOLD (Generic **Obstacle** and **Lane Detection**) system as an automatic driver of ARGO. ARGO is a Lancia Thema passenger **car** equipped with a **vision** -based **system** that allows to extract road and environmental information from the acquired scene. By means of **stereo** vision, obstacles on the road are detected and localized, while the processing of a single monocular **image** allows to extract the road geometry in front of the **vehicle**. The generality of the underlying approach allows to **detect** generic **obstacles** (without constraints on shape, color, or symmetry) and to detect lane markings even in dark...

... 200Mhz with MMX technology and a frame-grabber board able to acquire 3 b/w **images** simultaneously; the result of the processing (position of obstacles and geometry of the road) is...

English Descriptors: Motor car ; Artificial vision; Collision avoidance; Pavement; Autonomous system; Robotics; Moving robot; Carriageway marking

French Descriptors: Automobile ; Vision artificielle; Prevention esquive collision ; Chaussee; Systeme autonome; Robotique; Robot mobile; Marquage chaussee

?

46/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

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4852581 INSPEC Abstract Number: B9502-6140C-176, C9502-5260B-127

Title: Application of the controlled active vision framework to robotic and transportation problems

Author(s): Smith, C.E.; Papanikolopoulos, N.P.; Brandt, S.A.

Author Affiliation: Dept. of Comput. Sci., Minnesota Univ., Minneapolis, MN, USA

p.213-20

Publisher: IEEE Comput. Soc. Press, Los Alamitos, CA, USA

Publication Date: 1994 Country of Publication: USA xi+298 pp.

ISBN: 0 8186 6410 X

U.S. Copyright Clearance Center Code: 0 8186 6410 X/94/\$4.00

Conference Title: Proceedings of 1994 IEEE Workshop on Applications of Computer Vision

Conference Sponsor: IEEE Comput. Soc. Tech. Committee on Pattern Anal. & Machine Intelligence

Conference Date: 5-7 Dec. 1994 Conference Location: Sarasota, FL, USA

Language: English

Subfile: B C

Copyright 1995, IEE

...Abstract: from feature points on a target's surface and for the accurate and high-speed tracking of moving targets . We use these techniques in a system that operates with little or no a priori...

... designed under the controlled active vision framework and robustly determines parameters such as velocity for tracking moving objects and depth maps of objects with unknown depths and surface structure. Such determination of intrinsic environmental parameters is essential for performing higher level tasks such as inspection, exploration, tracking grasping, and collision -free motion planning. For both applications, we use the Minnesota Robotic Visual Tracker (a single...

... sensor mounted on the end-effector of a robotic manipulator combined with a real-time vision system) to automatically select feature points on surfaces, to derive an estimate of the environmental parameter...

... the manipulator. The paper concludes with applications of these techniques to transportation problems such as vehicle tracking.

...Identifiers: collision -free motion planning

?

48/3,K/1 (Item 1 from file: 8)

DIALOG(R)File 8:Ei Compendex(R)

(c) 2005 Elsevier Eng. Info. Inc. All rts. reserv.

04295923 E.I. No: EIP95122936367

Title: Collision avoidance using artificial retina sensor in ALV

Author: Kim, Kwang I.; Shin, Cheon W.; Inoguchi, Seiji

Corporate Source: Pohang Univ of Science and Technology, South Korea

Conference Title: Proceedings of the 1995 Intelligent Vehicles Symposium

Conference Location: Detroit, MI, USA Conference Date:

19950925-19950926

E.I. Conference No.: 44014

Source: Intelligent Vehicles Symposium, Proceedings 1995. IEEE, Piscataway, NJ, USA, 95TH8132. p 183-187

Publication Year: 1995

CODEN: 001680

Language: English

Title: Collision avoidance using artificial retina sensor in ALV

...Abstract: which was developed at Osaka university in JAPAN, is applied to PRV II (POSTECH Road Vehicle II) for real time collision avoidance in high speed navigation. ARS consists of a linear CCD sensor and a dove...

...can be utilized directly. Thus we only have to apply an edge detection and a template matching method to the horizontal direction. Then a optical-flow of moving objects is estimated to...

Descriptors: *Collision avoidance; Image sensors; Charge coupled devices; Edge detection; Optical flows; Object recognition; Image analysis; Ground vehicles; Intelligent vehicle highway systems; Computer vision

Identifiers: Artificial retina sensor; Autonomous land vehicle; Time to impact information

?

51/3,K/1 (Item 1 from file: 2)

DIALOG(R)File 2:INSPEC

(c) 2005 Institution of Electrical Engineers. All rts. reserv.

8212497 INSPEC Abstract Number: B2005-01-6135-354, C2005-01-7445-049

Title: Lateral motion tracking of automobiles

Author(s): Amditis, A.; Floudas, N.; Polychronopoulos, A.

Author Affiliation: National Tech. Univ. of Athens, Greece

Conference Title: Seventh International Conference on Information Fusion

Part Vol.2 p.768-74 Vol.2

Editor(s): Svensson, P.; Schubert, J.

Publisher: Int. Soc. of Information Fusion, Mountain View, CA, USA

Publication Date: 2004 Country of Publication: USA 1301 pp.

ISBN: 91 7056 116 8 Material Identity Number: XX-2004-01741

Conference Title: Seventh International Conference on Information Fusion

Conference Sponsor: Swedish Defence Res. Agency; SAAB AB; Ericsson

Microwave Syst. AB; Lockheed Martin Corp.; Sjoland & Thyselius AB; Int. Journal of Information Fusion

Conference Date: 28 June-1 July 2004 Conference Location: Stockholm, Sweden

Language: English

Subfile: B C

Copyright 2004, IEE

Title: Lateral motion tracking of automobiles

...Abstract: successful in range parameters tracking, fall short in lateral characteristics tracking. On the other hand, **vision systems** carry out perfect estimation for lateral motion, but range parameters estimation does not surpass the performance of radar. The exact estimation of **vehicle** 's motion characteristics appears to be a crucial issue in modern **automobile collision avoidance** systems. Thus, a fusion system comprising of radar and a FLIR could offer an...

...moving in highways. The main scope of the paper is the presentation of a double **Kalman** based **filter** which strives in lateral motion estimation mainly. The performance of the filter is tested by...

Descriptors: **collision avoidance**...

... **Kalman filters** ; ...

... **target tracking**

...Identifiers: **automobiles** ; ...

... **vision systems** ; ...

... **automobile collision avoidance** systems...

... **target tracking** ; ...

...double **Kalman** based **filter** ;

51/3,K/2 (Item 2 from file: 2)

DIALOG(R)File 2:INSPEC

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7914756 INSPEC Abstract Number: C2004-05-3360B-034

Title: A monocular- vision -based driver assistance system for

collision avoidance

Author(s): Liao Chuanjin; Qin Xiaohu; Huang Xiyue; Chai Yi; Zhou Xin

Author Affiliation: Coll. of Autom., Chongqing Univ., China

Conference Title: Proceedings of the 2003 IEEE International Conference on Intelligent Transportation Systems (Cat. No.03TH8708) Part vol.1 p.463-8 vol.1

Publisher: IEEE, Piscataway, NJ, USA

Publication Date: 2003 Country of Publication: USA 2 vol.1785 pp.

ISBN: 0 7803 8125 4 Material Identity Number: XX-2003-03445

U.S. Copyright Clearance Center Code: 0 7803 8125 4/2003/\$17.00

Conference Title: Proceedings of the 2003 IEEE International Conference on Intelligent Transportation Systems

Conference Date: 12-15 Oct. 2003 Conference Location: Shanghai, China

Language: English

Subfile: C

Copyright 2004, IEE

Title: A monocular- vision -based driver assistance system for collision avoidance

...Abstract: points and how to establish the math model of lanes. An algorithm based on extend Kalman filter for dynamic target tracking is presented in this paper. Analyze the usual calculation method of distance by multi-eye...

... up to the practical requirement This thesis studies the driving-habits discovery model of steering vehicle for a vehicle safety expert system.

Descriptors: **collision avoidance...**

... **Kalman filters** ; ...

... **target tracking** ;

Identifiers: monocular vision based driver assistance system ; ...

... **collision avoidance...**

... **Kalman filter** ; ...

...dynamic **target tracking** ; ...

... **vehicle steering...**

... **vehicle safety**

51/3,K/3 (Item 3 from file: 2)

DIALOG(R) File 2:INSPEC

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6734584 INSPEC Abstract Number: C2000-11-3360B-027

Title: Towards smarter cars

Author(s): Sobottka, K.; Meier, E.; Ade, F.; Bunke, H.

Author Affiliation: Inst. of Comput. Sci. & Appl. Math., Bern Univ., Switzerland

Conference Title: Sensor Based Intelligent Robots. International Workshop. Selected Papers (Lecture Notes in Artificial Intelligence Vol.1724) p.120-39

Editor(s): Christensen, H.I.; Bunke, H.; Noltemeir, H.

Publisher: Springer-Verlag, Berlin, Germany

Publication Date: 1999 Country of Publication: Germany viii+325 pp.

ISBN: 3 540 66933 7 Material Identity Number: XX-2000-00560
Conference Title: Sensor Based Intelligent Robots. International Workshop
Conference Date: 28 Sept.-2 Oct. 1998 Conference Location: Dagstuhl
Castle, Germany
Language: English
Subfile: C
Copyright 2000, IEE

Title: Towards smarter cars

Abstract: Most approaches for vision systems use grey scale or color images. In many applications, such as driver assistance or presence...

... to increase safety on motorways. This driver assistance system is capable of automatically keeping the car at an adequate distance or warning the driver in case of dangerous situations. The problem is addressed in two steps: obstacle detection and tracking. For obstacle detection two different approaches are presented based on slope evaluation and computation of a road model. For tracking, one approach applies a matching scheme and the other uses a Kalman filter. Results are shown from several experiments.

Descriptors: automobiles ; ...

... collision avoidance

Identifiers: smarter cars ; ...

... obstacle detection ; ...

... Kalman filter ; ...

... automobiles ;

51/3, K/4 (Item 1 from file: 8)
DIALOG(R)File 8: Ei Compendex(R)
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07230106 E.I. No: EIP05048799838

Title: Integrated object and road border tracking using 77 GHz automotive radars

Author: Polychronopoulos, A.; Amditis, A.; Floudas, N.; Lind, H.

Corporate Source: Microwaves Laboratory Dept. of Elec. and Comp. Engineering Natl. Technical University of Athens, 15773 Athens, Greece

Source: IEE Proceedings: Radar, Sonar and Navigation v 151 n 6 December 2004.

Publication Year: 2004

CODEN: IRSNE2 ISSN: 1350-2395

Language: English

Title: Integrated object and road border tracking using 77 GHz automotive radars

...Abstract: used in automotive on-board systems such as adaptive cruise control, which tracks the preceding vehicle and keeps a safe distance. The authors go a step further and exploit the potential...

...the estimation of the road borders and the reconstruction of the traffic scenario based on object tracking. A FMCW millimetre wave radar is mounted in the front bumper of a vehicle and delivers object lists to the central fusion processor, where detections are considered as

measurements...

...algorithm presented is designed to improve the prediction of paths and trajectories of the ego- vehicle in future enhanced **collision** warning and **collision** avoidance systems. Given the characteristics and limitations of a radar system, such as heavy clutter...

...reliably in highway and extra-urban scenarios and are competitive with data fusion and stereo **vision systems**, but with lower computational load. copy IEE, 2004. 18 Refs.

Descriptors: *Tracking radar; Sensor data fusion; Object recognition; Millimeter wave devices; Algorithms; **Collision** avoidance; Alarm **systems**; Radar **systems**; Stereo **vision**; Tracking (position); **Kalman filtering**

Identifiers: Automotive radars; Integrated **object tracking**; Road border **tracking**; Radar sensors; **Collision** warning

51/3,K/5 (Item 2 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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07041444 E.I. No: EIP04408382255

Title: **Combined road prediction and target tracking in collision avoidance**

Author: Eidehall, Andreas; Gustafsson, Fredrik
Corporate Source: Vehicle Dynamics and Active Safety Volvo Car Corporation, SE-405 31 Goteborg, Sweden
Conference Title: 2004 IEEE Intelligent Vehicles Symposium
Conference Location: Parma, Italy Conference Date: 20040614-20040617
E.I. Conference No.: 63502
Source: IEEE Intelligent Vehicles Symposium, Proceedings 2004 IEEE Intelligent Vehicles Symposium 2004.
Publication Year: 2004
Language: English

Title: **Combined road prediction and target tracking in collision avoidance**

Abstract: Detection and tracking of other **vehicles** and lane geometry will be required for many future intelligent driver assistance systems. By integrating...

...to improve the lane curvature estimate during bad visibility by studying the motion of other **vehicles**. This paper derives and evaluates various approximations that are needed in order to deal with...

Descriptors: ***Collision avoidance**; **Tracking** (position); Radar **target recognition**; Highway accidents; Object recognition; Intelligent **vehicle highway systems**; **Kalman filtering**; Computer **vision**

Identifiers: **Object tracking**; **Target tracking**; Intelligent automotive systems; Driver assistance systems

51/3,K/6 (Item 3 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)
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07036003 E.I. No: EIP04398376665

Title: **Vasilius: The design of an autonomous ground robotic vehicle**

Author: Snider, Jarrod M.; Snider, Amy E.; Riggins, Robert N.
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Title: **Vasilius: The design of an autonomous ground robotic vehicle**
...Abstract: the design and provides a partial analysis of the performance of an autonomous ground robotic vehicle called Vasilius. Applications for Vasilius include autonomous navigation on a somewhat marked path with obstacles...

...mapping, and learning. The design of Vasilius embodies a novel idea of modeling an autonomous vehicle after human senses and the human decision-making process. For instance, Vasilius integrates information from...

...have been measured include speed, ramp climbing, turn reaction time, battery life, stop reaction time, object detection, and waypoint accuracy. Finally, the paper discusses Vasilius' use of a new approach to filtering...

Descriptors: *Robotics; Unmanned vehicles ; Ground vehicles ; Collision avoidance; Navigation systems; Global positioning system ; Computer vision ; Robot learning; Kalman filtering ; State estimation; Mathematical models

Identifiers: Autonomous ground robotic vehicle ; Autonomous navigation; Waypoint navigation

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GLOBAL VISION FOR THE CONTROL OF FREE-RANGING AUTOMATIC GUIDED VEHICLE SYSTEMS
Author: KAY, MICHAEL GEORGE
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GLOBAL VISION FOR THE CONTROL OF FREE-RANGING AUTOMATIC GUIDED VEHICLE SYSTEMS

...dissertation introduces the method of "global vision" for the control of free-ranging automatic guided vehicle (AGV) systems. Global vision refers to the use of cameras placed at fixed locations in a workspace to extend the local sensing available on board each vehicle in a free-ranging AGV system. The fixed cameras provide the information to robustly control AGV systems composed of large numbers of low-cost vehicles. A system with these capabilities can expand the range of applications for which free-ranging AGVs are a high-performance and cost-effective material transport alternative. A possible overall global

vision -based AGV control system is first described, and then detailed methodologies are presented for camera placement, mobile object tracking, and determining the economic feasibility of global vision-based vehicle control. The camera placement problem in global vision refers to the determination of a minimal...

...is described that provides reasonable camera placements. Global vision-based AGV control provides for increased collision detection and path planning capabilities due to the ability to track mobile objects located in regions beyond the range of an AGV's on-board sensors. The tracking performance of a difference-image-based Kalman filter is detailed, where the correspondence problem is greatly reduced through the use of reference images...

...Each method of control is distinguished by its required equipment costs and the level of collision detection capability it provides. The potential impact of global vision for AGV control includes increased...

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IV'2002 : IEEE intelligent vehicle symposium : Versailles, 17-21 June 2002

This issue contains 101 papers presented during the IEEE Intelligent Vehicle Symposium held in Versailles-France the June 17-21 2002. The proceedings are classified in two parts around the following topics : pedestrian and obstacle detection, recognition systems, tracking systems, adaptative cruise control, electronic stability program, lane keeping assistant, collision warning and avoidance, parking assistant, stop & go, intelligent speed adaptation, platooning, vision systems, sensors, system - hardware and software, navigation, communication and control.

English Descriptors: Transportation system; Road transportation; Motor industry; Vehicle ; Tracking(movable target) ; Detect ion^Recog ; Recognition; User assistance; Vehicle driving; Behavioral analysis; Navigational aid; Vision system ; Obstacle; Pedestrian; Alarm system; Moving robot; Intelligent system; Autonomous system; Measurement sensor; GPS system; Kalman filter ; Fuzzy logic; International conference; Numerical simulation; Image processing; Automatic classification; Parking ; Accident prevention; Traffic lane...

French Descriptors: Système transport; Transport routier; Construction automobile ; Véhicule; Poursuite; Détection; Reconnaissance; Assistance utilisateur; Conduite véhicule; Analyse comportementale; Aide navigation; Système vision ; Obstacle; Piéton; Système alarme; Robot mobile; Système intelligent; Système autonome; Capteur mesure; Système GPS; Filtre Kalman; Logique floue...

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